

U.S.S.N. 10,693,989

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Thorough examination by the Examiner is noted and appreciated.

Applicants gratefully acknowledge indication of allowable subject matter in claims 2, 8, and 15.

The claims have been amended by incorporating the limitations in claims 2, 8, and 15 into respective claims 1, 7, and 14 to achieve allowable subject matter as indicated by Examiner.

No new matter has been added.

Claim Rejections under 35 USC 102(b)

Claims 1, 3-7, 9-14, and 16-20 stand rejected under 35 USC Section 102(b) as being anticipated by Lee (US 5,932,378).

Lee et al. generally disclose methods in the prior art for forming a phase shifting mask where the phase shifting photomask

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includes a transparent shifter portion (e.g., item 35, Fig 3C) that shifts the light phase by 180 degrees with respect to the phase of light passing through the shifter portion relative to a non-shifting (transparent) portion (e.g., item 35, Fig 3C) (see also col 1, lines 27-29; col 2, lines 17-35; Figure 3C).

Lee et al. more specifically disclose methods in the prior art for forming the phase shift mask where an opaque portion (item 21, Fig 4B) is first laterally etched (undercut etching), followed by anisotropically etching the transparent substrate (item 20, Fig 4C) to a first depth to form a first phase shift (col 2, lines 59-67). Then a patterned layer is formed to form an etching mask covering some of the first opening depths and expose second openings overlying and encompassing remaining first openings (see item 116, Fig 4D). The second openings including the first depth are anisotropically etched through the etching mask again to form a second depth of the first openings (see item 36, Fig 4E) and form a stepped portion equal to the first depth (see item 35, Fig 4E) (col 3, lines 1-9). Lee also disclose that the prior art has the shortcoming in the step of undercut etching (isotropic etching) of the opaque portion of allowing etchant solution between the photoresist and the chromium layer to disadvantageously etch the chromium (col 3, lines 10-15).

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The prior art fails to disclose wherein the stepped sidewall comprises a minimum of one arc shaped step.

Conclusion

Applicants gratefully acknowledge indication of allowable subject matter in claims 2, 8, and 15. Applicants have amended the claims to achieve allowable subject matter as indicated by Examiner.

Based on the foregoing, Applicants respectfully submit that all of the Claims are now in condition for allowance. Such favorable action by the Examiner at an early date is respectfully solicited.

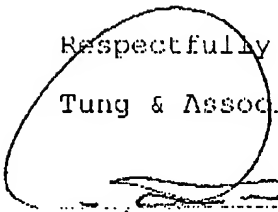
In the event that the present invention as claimed is not in a condition for allowance for any other reasons, the Examiner is respectfully invited to call the Applicants' representative at his Bloomfield Hills, Michigan office at (248) 540-4040 such that necessary action may be taken to place the application in a condition for allowance.

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Respectfully submitted,

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